

WHAT IS CLAIMED IS:

1 1. A method of producing fine-line circuitry on a printed
2 circuit board having a planar surface and at least one filled
3 plated through hole, said method comprising the steps of:
4 (a) drilling at least one hole through a dielectric
5 substrate, said hole defining a surface;
6 (b) depositing a seed layer on planar surface of said
7 dielectric substrate and on said surface defined by said hole;
8 (c) depositing electrically conductive plating on said
9 planar surface of said dielectric substrate and on said surface
10 defined by said hole to form a subcomposite;
11 (d) filling said hole with a filler composition;
12 (e) etching said subcomposite to partially remove said
13 electrically conductive layer to thereby reduce the
14 thickness of said electrically conductive layer;
15 (f) removing residual amounts of said filler composition on
16 said subcomposite;
17 (g) etching said subcomposite to completely remove said
18 electrically conductive layer;
19 (h) depositing a seed activator on the surface of said
20 subcomposite;
21 (i) covering said subcomposite with a photoresist and
22 exposing and developing said photoresist to reveal selected areas
23 of said subcomposite; and
24 (j) additively plating electrical circuitry on said
25 selected areas of said subcomposite.

1 2. The method of claim 1 wherein said dielectric
2 subcomposite is an epoxy.

1 3. The method of claim 1 wherein said etching of said
2 electrically conductive layer in step (e) reduces the thickness
3 to a minimum thickness of about 0.2 mil.

1 4. The method of claim 1 wherein said additive plating
2 onto said subcomposite produces circuit lines, the thickness and
3 width of said lines being approximately equal.

1 5. The method of claim 1 wherein the width of the lines of
2 said circuitry deposited on said filled plated through hole is
3 about equal to or less than the diameter of said filled plated
4 through hole.

1 6. The method of claim 1 wherein the method further
2 comprises attaching a component having a pad to said conductive
3 plating deposited on said filled plated through hole, the
4 diameter of said pad being approximately the same size or smaller
5 than said plated through hole.

1 7. The method of claim 1 further comprising, providing a
2 photosensitive dielectric layer on said subcomposite, and forming
3 circuit lines on said photosensitive dielectric material, and
4 forming vias through said photosensitive dielectric such that
5 said circuit lines communicate with said fine-line circuitry of
6 said subcomposite.

1 8. A method of producing fine-line circuitry on a printed
2 circuit board having filled plated through holes, said method
3 comprising the steps of:

- (a) drilling at least one hole through a dielectric substrate, said hole defining a surface;
- (b) depositing electrically conductive plating on planar surface of said dielectric substrate and on said surface defined by said hole to form a subcomposite;
- (c) filling said hole with a filler composition, said composition having nubs protruding beyond said planar surface of said subcomposite;
- (d) removing said nubs of said fill composition such that said planar surface of said subcomposite is nearly smooth;
- (e) etching said subcomposite to partially reduce the thickness of said electrically conductive metal layer;
- (f) scrubbing said nubs of fill composition protruding from said subcomposite;
- (g) etching said subcomposite to completely remove said electrically conductive metal layer of said subcomposite;
- (h) depositing a seed activator on said subcomposite;
- (i) covering said subcomposite with a coating and exposing and developing said coating to reveal selected areas of the said subcomposite;
- (j) depositing conductive plating on said exposed areas of subcomposite to form fine-line circuitry; and
- (k) stripping said photoresist.

9. A printed wiring board comprising a dielectric substrate, at least one filled plated through hole, and circuitry on said dielectric substrate connecting to said plated through hole, said circuitry having a line width approximately equal to or less than the diameter of said filled plated through hole.

10. A printed wiring board comprising a dielectric
substrate, at least one filled plated through hole, and circuitry

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3 on said dielectric substrate connecting to said plated through
4 hole, said circuitry having an aspect ratio greater than about
5 0.5.

11. A printed wiring board comprising a dielectric
substrate, at least one filled plated through hole, and circuitry
on said dielectric substrate connecting to said plated through
hole, said circuitry having an aspect ratio greater than about 1.